

## REMARKS/ARGUMENTS

Claims 1-5 are pending herein and have been amended hereby to correct matters of form and for clarification purposes only. In addition, independent claim 1 has been amended to clarify that the angles  $\theta_1$ -  $\theta_4$  are in a range of 135° to 160°. Applicant respectfully submits that support for rewritten claim 1 can be found on page 27 of the specification, for example, and that no new matter has been added.

1. The §112, second paragraph rejection of claim 1 is noted, but deemed moot in view of rewritten claim 1 submitted above. Accordingly, Applicant respectfully requests that the above rejection be reconsidered and withdrawn.
2. Claims 1-5 were rejected under §103(a) over Yorita. To the extent that the PTO might attempt to assert this rejection against the rewritten claims submitted above, it is respectfully traversed.

Independent claim 1 recites a ceramic filter including, among other things, a porous body having two end surfaces and an outer peripheral surface and having a plurality of main flow passages for a fluid to be purified which penetrate from one end surface to other end surface and which are partitioned from one another via partition walls and filtration membranes provided on inner wall surfaces of the main flow passages. The cross-sectional shapes of the plurality of main flow passages, in a direction perpendicular to a flow direction of the fluid to be purified or the purified fluid, are aligned in rows with a predetermined pattern. At least one specific partition wall part, among the partition walls, is positioned between the rows of predetermined main flow passages to define at least one first main flow passage disposed in the vicinity of each other, the cross-sectional shape of the at least one partition wall part, in the direction perpendicular to the flow direction of the fluid to be purified or the purified fluid, is so formed as to be encompassed by a shape defined by two parallel lines apart at a specified distance from each other, wherein the cross-sectional shapes of the at least one first main flow passage, in the direction perpendicular to the flow

direction of the fluid to be purified or the purified fluid, are formed into irregular polygonal shapes having seven or more sides arranged so that a predetermined reference side of one faces a predetermined reference side of another first main flow passage via the at least one specific partition wall part so that the predetermined reference sides constitute the two parallel lines and the sides crossing opposite ends of the reference side are second and third sides, a side crossing an end of the second side opposite to the reference side is a fourth side, and a side crossing an end of the third side opposite to the reference side is a fifth side,  $\theta_1$ ,  $\theta_2$ ,  $\theta_3$ , and  $\theta_4$  (wherein the  $\theta_1$ ,  $\theta_2$ ,  $\theta_3$ , and  $\theta_4$  indicate an angle ( $\theta_1$ ) formed by the reference side and the second side, an angle ( $\theta_2$ ) formed by the reference side and the third side, an angle ( $\theta_3$ ) formed by the second and fourth sides, and an angle ( $\theta_4$ ) formed by the third and fifth sides, respectively) are within a range of 135 to 160°, and a length (A) of the reference side and a maximum distance (B) between the fourth and fifth sides satisfy a requirement of  $0.3B \leq A \leq 0.7B$ .

In the Office Action, the PTO cited facts relating to the mathematical aspects of regular polygons and regular heptagons, which, as one skilled in the art knows, are polygons where all of the sides are equal and all of the angles are equal. Applicant respectfully submits, however, that the first main flow passages closest to both sides of the specific partition wall according to rewritten claim 1 are not *regular* polygons. To the contrary, rewritten claim 1 specifically recites that the shapes are irregular polygonal shapes having seven or more sides.

In view of the fact that the first main flow passages (closest to the specific partition wall) are not regular polygons, Applicants respectfully submits that one skilled in the art would understand that the PTO's assertions, based on regular polygons, do not inherently apply to an *irregular* polygon (e.g., a polygon whose sides and angles are not all equal), as claimed. Applicant respectfully submits that this position is supported by the same "Math Open Reference" web pages cited by the Examiner. In particular, the sub-section labeled Regular Polygons on page 2 thereof

states that “the sides of an irregular polygon are essentially random lengths. There is no formula to calculate their lengths.”

In view of the above, Applicant respectfully submits that the PTO’s position regarding the alleged inherency of the claimed length values of the reference side is incorrect, particularly in view of rewritten claim 1, which, again, now recites that at least the first main fluid passages have an *irregular* polygon shape with seven or more sides.

In addition, with respect to the claimed angle limitation, Applicant respectfully submits that rewritten claim 1 recites that the angles are in a range of 135° to 160°. The lower limit of 135° is supported by the specification on page 27, and does not include or overlap the angle of ~129° that is required for and, according to the PTO’s assertions, would be inherently present in a *regular* heptagon.

For at least the reasons explained above, Applicant respectfully submits that Yorita fails to disclose or suggest each and every feature recited in independent claim 1. Accordingly, Applicant respectfully submits that independent claim 1, and all claims depending directly or indirectly therefrom, define patentable subject matter over the prior art of record, and respectfully requests that the above rejection be reconsidered and withdrawn.

3. Claims 1-5 were rejected under §103(a) over Yasuo (JP ‘920) in view of LaBarge. To the extent that the PTO might attempt to assert this rejection against the rewritten claims submitted above, it is respectfully traversed.

Independent claim 1 is discussed above in Section 2.

The PTO applied LaBarge only with respect to the claimed polygonal cross-sectional shape of the cells (i.e., seven or more sides), which the PTO admitted is not taught in JP ‘920. That is, JP ‘920 does not disclose the claimed angles and reference side length limitations, or that at least the first main fluid passages, particularly those on either side of the specific partition wall, are irregular polygons having seven or more sides. In fact, Applicant respectfully submits that the comparative example in

the present application corresponds to the structure in JP '920, which instead includes pentagonal first fluid passages, with the remainder being hexagonal main fluid passages. The data and results on page 29 of the present specification show that unexpected results occurred with respect to the significant difference between the number of defects and the defect ratio in the example, which corresponds to the claimed invention, and those of the comparative example, which corresponds to JP '920, when the only structural difference between the example and comparative example is the size and shape of the fluid passages.

For at least the reasons explained above, Applicant respectfully submits that JP '920 fails to disclose or suggest each and every feature recited in independent claim 1, and LaBarge cannot overcome the deficiencies of JP '920. Accordingly, Applicant respectfully submits that independent claim 1, and all claims depending directly or indirectly therefrom, define patentable subject matter over the prior art of record, and respectfully requests that the above rejection be reconsidered and withdrawn.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

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